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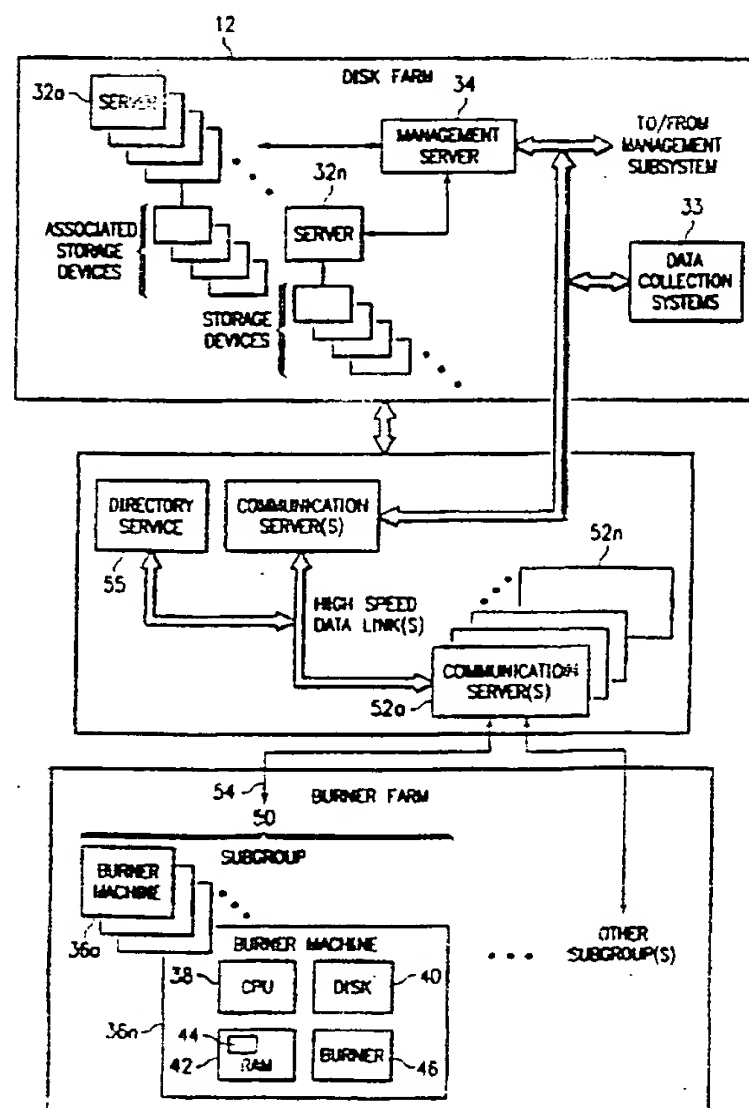
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(71) Applicant: CUSTOMTRACKS CORPORATION [US/US]; One Galleria Tower, Suite 1555, 13355 Noel Road, Dallas, TX 75240–6604 (US).

(72) Inventor: COOK, David, P.; 15 Downs Lake Circle, Dallas, TX 75230 (US).

(74) Agent: JUDSON, David, H.; Hughes & Luce, L.L.P., Suite 2800, 1717 Main Street, Dallas, TX 75210 (US).

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(57) Abstract

A system for selling, manufacturing and distributing a custom digital data product from retail stores, over the Internet (24), the telephone, or by electronic means. A customer selects a "set" of recordings from a library. A disk and burner farm (50) communicate via a communications subsystem (14). Upon assembly and manufacture, the product is packaged and shipped.

METHOD AND SYSTEM FOR MANUFACTURING A DATA PRODUCT

BACKGROUND OF THE INVENTION

5 **Technical Field**

The present invention relates generally to computer-aided product manufacture and distribution and, more particularly, to a method and system for assembly, manufacture and distribution of custom "data" products,

10 such as a CD (read only), CD (read/write), DVD or similar static storage medium (collectively, a "CD" or "CD-ROM"), especially a CD product incorporating customer-selected musical sound recordings.

Description of the Related Art

15 The standard model for the manufacture and distribution of music is well-established in the entertainment industry. With the explosive growth of the Internet, however, it is now possible to transfer large amounts of digital data electronically. Thus, the

20 Internet has the capability of being a useful medium for transfer of digital data comprising sound recordings. To this end, it has been proposed to provide an "interactive" World Wide Web ("WWW") site at which users may create their own "custom" CD-ROMs. Using an interactive "fill-in

25 form" type of interface, the user selects a plurality of sound recordings from a library or catalog of available recordings. Once the CD selections are made, the user is prompted for a credit card number. The credit card is verified, and the CD-ROM is then manufactured and

30 delivered to the user.

Although the above-described system has the advantage of enabling a user of the Internet to create a custom CD product, there are no currently available sites from which a broad range of musical recordings may be assembled, nor

35 are the sites or assembly operations scaleable to facilitate large scale operations. Moreover, such sites

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do not provide significant tracking, inventory control and other administrative and management tools to facilitate such a large-scale operation.

The present invention addresses this problem.

SUMMARY OF THE INVENTION

It is a primary goal of the present invention to provide a custom CD assembly, manufacturing and distribution method and system.

It is a more specific object of this invention to enable a customer to assemble or create a user-defined "set" of musical recordings from a massive library or archive of such recordings. After selection, the set of recordings are "assembled" and "burned" into a physical medium (such as a CD-ROM), preferably at a large-scale manufacturing or "burning" facility. Individual burner machines in the facility operate in an essentially autonomous or "standalone" manner to facilitate large scale production of custom CD products. This "burner-centric" architecture facilitates continuous and efficient production of products as the service is scaled to handle very large number of orders in a concurrent fashion.

It is a more general object of the invention to implement a large-scale custom music CD service where custom CD-ROMs (or other such digital "products") are ordered at retail establishments, over the Internet, by electronic communication (e.g., fax, e-mail, or the like) or over a conventional telephone connection.

It is still another object of this invention to implement a computer-assisted custom CD ordering, assembly, manufacturing and distribution service wherein a customer may easily track the entire manufacturing and delivery process at all operative stages.

It is yet another more general object of this invention to provide computer-aided ordering, assembly, manufacturing and distribution of digital data products.

It is yet another aspect of this invention to maintain, in the custom CD manufacturing system, certain

information about a customer's musical or data preferences, creditworthiness, and past buying habits, to thereby facilitate future product purchase transactions.

Another more specific object of this invention is to
5 provide such a system for making, selling and distributing a custom digital data product over the Internet, in retail stores, via electronic communication, or over the telephone, wherein a customer is provided (preferably by electronic mail ("e-mail") verification) with order
10 tracking information.

According to the invention, a customer "orders" a custom product in a variety of ways. Thus, for example, a customer may create, order and purchase the product from a retail site and, in particular, through entry of
15 information at a computer terminal in an online process. Preferably, but not necessarily, the computer terminal is a "diskless" computer, also known as a "network" computer. Alternatively, a user may create, order and purchase the product by accessing an Internet site from which the
20 custom CD "service" is provided. Another alternative is for the user to access a telephone network (such as an 800-number service), and to order the custom CD through interaction with a human or automated operator, or by fax or e-mail. Regardless of how the user accesses the
25 system, it is assumed that the customer selects a "set" of sound recordings (or data) from a library or catalog of such recordings (or data), and he or she then determines the order of presentation of the selected recordings (or data). The library of available recordings is preferably
30 supported by a massive "disk farm," which is preferably a relatively large collection of computers on which (or attached to which) are stored digital data comprising the available recordings (or data). Once the CD has been assembled in a manner to allow the system to automatically
35 "manufacture" the product, the product is preferably created at a dedicated manufacturing facility (e.g., a "burner farm"). The product is then shipped to the

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customer, or to some third party as may be requested by the customer.

Preferably, the individual song tracks comprising the requested CD product are assembled at the burner farm.
5   Alternatively, the customer (or the disk farm) may assemble the song data in a prior process and submit the assembled data (e.g., as a "compilation") to a burner machine directly or alternatively transmit the data electronically.

10   In accordance with a preferred embodiment of the invention, a custom CD set is created in an online manner using an appropriate user interface. Then, the customer is prompted to enter appropriate information from which some form of payment is extracted. Thus, for example, the
15   user may enter his or her credit card number through a secure interface (e.g., a secure sockets layer or "SSL"). Upon payment or credit verification, the set of data components (i.e., the song tracks) selected by the customer are caused to be transferred from the disk farm
20   to the manufacturing facility, which preferably comprises a collection of machines that "burn" or otherwise generate the products. The set of components is sometimes referred to as an "image" of the CD product. Preferably, the "burner" farm (like the disk farm) comprises a large
25   number of connected computers and associated burner machines useful in manufacturing CD-ROM (or other digital data) products. The system further includes appropriate control, administrative and management routines and devices as are necessary to ensure that a large number of
30   products may be continually assembled, manufactured, packaged and shipped as multiple customers continually access the facility (e.g., through retail sites, the Web site, through direct electronic communication, and the like) and multiple product "images" are in turn
35   transferred from the disk farm to the facility.

In a particular preferred embodiment, large scale processing of CD product orders is facilitated by

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operating a burner farm with many hundreds or even thousands of individual burner machines. The entire set of such machines is preferably organized into a hierarchy of subgroups, with each subgroup including approximately
5   30-50 individual burner machines, depending on available bandwidth, burn capability and other considerations. Upon initialization, however, each individual burner machine or server is self-directed or "autonomous" and thus takes on as much "work" (e.g., new requests to burn CD products) as
10   it is capable of handling given the network and subgroup load, and other operating conditions. The manufacturing facility is thus "burner-centric," as individual burner machines or servers in the large set of such machines control their own destiny. This architecture is highly
15   scaleable and efficient, and it facilitates processing of a very large number of concurrent orders as such orders are placed from the various order entry terminals and other means previously described.

        Preferably, after an order is "accepted" for
20   processing, a customer is provided with an e-mail communication verifying the transaction. The e-mail message preferably also includes a "hyperlink" that includes an order confirmation or other order tracking identifying number(s). Activation of the hyperlink by the
25   customer automatically launches the customer's Web browser software to a Web site from which he or she may then track the manufacture of the actual product (i.e., during the various stages of assembly and burning of the CD-ROM). After the product has been manufactured and packaged, the
30   customer preferably is provided with a second e-mail indicating that the product has been shipped. Preferably, the second e-mail also includes a hyperlink with an associated shipping tracking number. Upon activation of the hyperlink, the customer accesses the Web site (or some
35   other site, such as a UPS® or Federal Express® site) and may then "follow" the product as it moves to its intended destination through one or more distribution channels.

The foregoing has outlined some of the more pertinent objects and features of the present invention. These objects should be construed to be merely illustrative of some of the more prominent features and applications of the invention. Many other beneficial results can be attained by applying the disclosed invention in a different manner or modifying the invention as will be described. Accordingly, other objects and a fuller understanding of the invention may be had by referring to the following Detailed Description of the Preferred Embodiment.

BRIEF DESCRIPTION OF THE DRAWINGS

For a more complete understanding of the present invention and the advantages thereof, reference should be made to the following Detailed Description of the Preferred Embodiment taken in connection with the accompanying drawings in which:

Figure 1 is a representative computer-implemented custom product ordering, assembly, manufacturing and distribution system according to the present invention; and

Figure 2 is a block diagram of a preferred manufacturing facility that is connected to a large "disk farm" via a communications subsystem according to the teachings of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The present invention is described in the context of a custom "music CD" ordering, assembly, manufacturing and distribution system or "service" wherein the particular content (i.e., the digital data embodied on the physical medium, namely a "CD-ROM") is a set of one or more sound recordings. Thus, for example, the "product" is a CD-ROM on which approximately fifteen (15) different sound recordings or "tracks" are supported. This number, of course, is merely illustrative and depends on the size of the particular component files and the capacity of the

storage medium. Thus, for example, if the medium is a digital video disk (DVD), up to one hundred (100) tracks or more may be supported. The particular sound recordings and their sequence are customer-selectable. Thus, the

5 product is said to be "customized" or is a "custom" CD. Although this particular instantiation of the invention is one preferred method, it is merely representative of the various methods, techniques and systems may be used for any type of digital data and not merely music. Moreover,

10 although the preferred "product" created by the invention is a CD-ROM, this is not a limitation either as the "product" may be a CD (read/write), DVD, digital audio tape, or any other physical medium on which digital data may be stored (even if by conversion). This includes now

15 known or hereinafter developed tangible media.

As seen in **Figure 1**, the system **10** comprises a number of major components: a storage subsystem or "disk farm" **12**, a communications subsystem **14**, an Internet-type (e.g., a Web) server **15**, a management subsystem **16**, a credit

20 subsystem **17** (which may be part of the system **10** or a separate third party-managed facility accessible via a known connection), a manufacturing subsystem or (in the case of a CD product) so-called "burner farm" **18**, and a shipping management subsystem **19**. As will be described

25 below, the disk farm **12** generally includes a plurality of servers and a large number of networked or linked storage devices for supporting digital data comprising the library or "archive" of available sound recordings (or data). The burner farm generally includes a plurality of burner

30 machines, each of which comprises a processor, a disk storage and one or more CD burner(s). Communications subsystem **14** generally includes a set of communication servers and, optionally, a directory server, which together facilitate very high speed transfer (e.g., on the

35 order of 45 Megabytes/second or higher) of large amounts

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of digital data between the disk and burner farms, as will be described.

A set of retail machines 20, preferably located at retail establishments 22, interface to the system,
5   preferably via the Internet 24, by a direct connection, or by some other computer network such as an intranet, an extranet or other known or hereinafter network connection. Each retail machine is preferably a "diskless" computer, sometimes referred to as a "network" computer. This is
10 not a requirement of the invention, however. As is known in the art, a "network" computer includes a processor, random access or other "volatile" memory (RAM), a display interface, one or more input devices (such as a mouse, a keyboard, and the like), and appropriate communications
15 hardware for interfacing the machine to a computer network. When the machine is turned on, operating system software and other application software is downloaded or loaded to the RAM for use during a particular network session, although such software does not normally remain
20 resident on the machine. Preferably, the machine does not include a hard drive or other non-volatile memory system (but this is not a requirement). This is advantageous when the machine is implemented at a retail establishment, where many third parties come into contact with the
25 machine and its operating components.

In a preferred embodiment, one or more of the product "ordering" features and functions of the present invention are provided at a given retail machine using a "Java"-type application. As is known in the art, Java is an object-
30 oriented, multi-threaded, portable, platform-independent, secure programming environment used to develop, test and maintain software programs. Java programs include full-featured interactive, standalone applications, as well as smaller programs, known as applets, that run in a Java-
35 enabled Web browser or in a Java-enabled virtual environment.

Preferably, a network computer located at a retail establishment includes a credit card reader or keypad for receiving a credit card or other billing information. Alternatively, the customer may simply pay for the product

5 (at a register) and receive an access number (that must be entered into the machine) or even a token. In a further alternative, a customer may purchase (at retail, electronically or otherwise) a "gift" certificate for a third party, who may then access the service by going to

10 the retail establishment and supplying the gift number or token to the network machine (or an operator thereof). Of course, as used herein, "retail establishment" should be broadly construed to mean any publicly-accessible location (e.g., a kiosk or the like) and not merely a "for profit"

15 retail store.

The assembly, manufacturing and distribution system 10 also preferably interfaces to a set of client machines 26, preferably via the Internet 24. A representative client machine 26 is a personal computer such as a desktop

20 or notebook computer, e.g., an IBM® or IBM-compatible machine, running an Intel x86 or Pentium®-based computer processor with a Windows '95 operating system. Any suitable terminal with an Internet browsing capabilities, of course, may be used as a client machine. The client

25 thus includes an appropriate graphical user interface (GUI). A typical client machine is located at customer's home or office and connects to the Internet via an Internet Service Provider (ISP) through a dialup network connection or through other direct connections that may be

30 available. Alternatively, a client machine connects to the Internet through a so-called online service provider such as America Online® or the like. The particular method of connection, of course, is not pertinent to the present invention. Thus, for example, a "retail" machine

35 need not be connected to the service via the Internet.

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Each of the machines (possibly including the network
computers located at the retail establishments) that
interface to or form part of the system preferably include
a "suite" or collection of known Internet tools to access
5   other computers of the network and thus to obtain certain
services. These services may include one-to-one messaging
(e-mail), one-to-many messaging (bulletin board), on-line
chat, file transfer and browsing. Various known Internet
protocols are used for these services. Thus, for example,
10   browsing is effected using the Hypertext Transfer Protocol
(HTTP) or such other protocols hereinafter developed or
adopted, which provides users access to multimedia files
using Hypertext Markup Language (HTML) or any other
hereinafter developed or adopted markup, scripting or
15   alternative language or technique. The collection of
servers that use HTTP comprise the World Wide Web, which
is currently the Internet's multimedia information
retrieval system. Digital files are normally transferred
over the Internet using the File Transfer Protocol (FTP)
20   in a known manner.

Referring back to **Figure 1**, Internet server **15**
supports a collection of related documents that together
comprise a so-called "Web site" from which the custom CD-
ROM manufacturing/distribution service of the present
25   invention may be accessed. The Internet server **15** is
shown as a single machine, but one of ordinary skill will
appreciate that the site may be "mirrored" or copied to
comprise a plurality of similar server machines (scaled).
The Web server **15** is accessible through the WWW or
30   Internet-type network in a known manner. In the Internet
paradigm, a network path to a server is identified by a
so-called Uniform Resource Locator (URL) having a special
syntax for defining a network connection. Use of an HTML-
compatible browser (e.g., Netscape Navigator™ or Microsoft
35   Internet Explorer™) at a client machine involves
specification of a link via the URL. In response, the

client makes a request to the server identified in the link and receives in return a document formatted according to HTML (or similar markup language, such as SGML or XML).

Management subsystem **16** includes a workstation or
5   other similar computer or computers. Thus, for example, the management subsystem **16** comprises a computer, or a set of computers connectable via a local area network (LAN), wide area network (WAN) or other such connection. Management system **16** includes appropriate control routines
10   for receiving and formulating information from the various order-entry terminals (and means) as described above, and, in response thereto, directing customer "orders" to the manufacturing facility. Management system also includes appropriate database or other storage facilities for
15   maintaining transaction information including, without limitation, the identity of each customer accessing the service, the customer's identifying information (e.g., name, address, social security number, credit card information and validation information, personal
20   identification number ("PIN") or other security information), historical information about past purchases or inquiries, playlists for CD-ROMs previously-purchased, "favorites" lists, and the like. The management system **16** also includes control routines for managing transactions.
25   Preferably, the management system operates in a secure manner (e.g., using SSL) such that only the customer and third parties authorized by the customer may access the stored user and preferences information. Using information in the management system, the service provider
30   may determine the particular sound recordings or data previously "purchased" by the customer. Although not required, the management server may also implement an advertising or other content server that formats and displays specialized ads or other content (such as
35   announcements of new recordings, artist concerts, and the like) that may be of interest to a particular customer

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based on the customer's past preferences. Such display may be in the form of "banner" ads as part of a Web page when the user contacts the Internet server 15, or the information may be provided via e-mail, or even via direct
5   mail or the like.

Management subsystem 16 preferably also includes an accounting system for administration and management of all customer transactions. Functions typically provided by the accounting system include transaction handling,
10   billing, account management and the like. The accounting routine interfaces with the credit subsystem 17 in a known manner to "validate" a particular credit card information.

Although not meant to be limiting, a representative server platform for use as the Web server 15 and in the
15   management subsystem 16 is an IBM RISC System/6000 computer (a reduced instruction set of so-called RISC-based workstation) running the AIX (Advanced Interactive Executive Version 4.1 and above) operating system and server program(s). The platform also includes a graphical
20   user interface (GUI) for management and administration. It may also include an application programming interface (API). Although the above platform is useful, any other suitable hardware/operating system/server combinations may be used.

25   Communications interface 14 also includes all the necessary hardware, software and communications devices to facilitate high speed, secure communications to and from the management subsystem to the other components of the service. Thus, in the preferred embodiment, the
30   communications interface implements a firewall or other convenient security mechanism.

A user accessing the system selects a "set" of recordings (e.g., (song/artist) 1; (song/artist) 2, and so forth). Preferably, in the case of a music CD-ROM,
35   approximately fifteen (15) titles are selected for a

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particular product. The particular technique for selecting the titles will depend on the interface and thus the method of accessing the service. In a typical case, a user of a client machine accesses the Internet server **15**

5 through a Web browser and is presented with an option to purchase a custom CD. Using a convenient user interface (e.g., preferably implemented in a Java-type applet running in the browser), the customer selects a given artist and/or given sound recordings. A convenient

10 technique (if feasible, given the particular terminal) for this purpose is a "drag-and-drop" interface wherein the customer selects a given title from one portion of the interface and "drags" the title to a playlist located on another portion of the interface. The customer may then

15 re-order the selected titles, delete a particular title, add another title, save the playlist, and so forth. After the set of sound recordings (i.e., the playlist) for a particular custom CD is finalized, the customer's payment method is validated (e.g., using a call to the credit

20 subsystem) and the "order" is accepted. The order is then assigned an order confirmation or "job" number by the management system. This order confirmation number is one preferred means by which the job is managed by the system (and tracked by the customer, as will be seen).

25 Referring now to **Figure 2**, the disk farm **12** preferably comprises a large number of servers 32a-32n and possibly **1000's** of networked or linked storage devices for supporting the digital data. A representative storage device is a disk, optical disk storage or the like.

30 Appropriate data collection systems 33 may be used to collect sound recordings or data and, if necessary, to convert such information into a suitable format for storage in the storage devices of the disk farm. If necessary, one or more "management" servers 34 may be used

35 to control individual machines in the farm. By way of example only, a typical "popular" musical sound recording

list for each subgroup or burner machines within a
subgroup may thus vary on a periodic basis.

5   When a burner machine is initialized or is otherwise
idle, it polls (but may also be sent by) the management
subsystem, in effect, requesting new work. If, at that
time, the management subsystem has an order for a custom
CD product that has not been assigned to a particular
burner machine, the management subsystem 16 assigns the
order to the burner machine. Thus, for example, the
10   management subsystem provides an order/shipping number,
the customer's name and address, the song tracks, their
sequence, the identity of a shipper, and other necessary
information. As the burner machine then cycles through
its task list, the order is then processed by that burner
15   machine.

Preferably, but not by way of limitation, the actual
song track components are "retrieved" by the burner
machine (or by some control device on its behalf). Thus,
for example, and with reference to **Figure 2**, the
20   particular burner machine that is processing the order may
poll the directory service **55** to obtain the particular
location of the file comprising the component in question.
The directory service **55** may return the actual location
information (e.g., "track **1**:located on server **7**, disk bank
25   **52**") to enable the burner machine to then retrieve the
file directly, or the directory service may provide
appropriate control signals to that server/disk bank
location so that the file can be downloaded directly. In
either case, the component file is copied over the high
30   speed datalink until it reaches the subgroup with which
the particular burner machine is associated. The song
track component (typically in the form of a .wav file) is
then transferred (via the possibly lower speed connection
54) to the buffer/cache storage of the burner machine (or
35   server). At this time, hidden "codes" may be implanted
within (or otherwise associated with) the sound recording

(or data) to later facilitate the tracking (by order number) the origin of a particular copy of a sound recording (or data).

Once a particular burner machine receives all the
5   data necessary to burn the product, the burning process preferably should not be interrupted to ensure a high quality, usable product. Thus, the particular management routines in each of the disk farm and burner farm machines preferably include appropriate control routines to ensure
10   that once the set of component files have been received at the burner machine, the particular burner machine responsible for the burn will then be isolated from other network traffic (or other similar system interference) that might otherwise interrupt or disable the particular
15   burn. In a possible embodiment, the burner machine is forced to log off or otherwise disconnect from the network (e.g., the communications subsystem) before the burn starts. In this manner, all bytes comprising a single product may be buffered (without network interruption) in
20   the particular burner machine prior to initiation of the CD-ROM burn.

Thus, according to the present invention, the manufacturing facility operates in a "burner-centric" manner with each of the burner machines preferably
25   controlling its own "destiny" (e.g., whether it is operating to burn a particular CD at a given period of its operation). Each burner machine is provided its own task list (which may vary periodically or across any given subgroup of such machines). The burner machine cycles
30   through the various tasks on its list, and polls the management subsystem for new work whenever necessary. The distributed burner-centric architecture ensures that no particular machine or subgroup of machines can become a "bottleneck" to the overall operation of the service.
35   Indeed, using the task list(s), the service operator or automated manager may take individual burner machines offline for repair and maintenance, or to otherwise

address network or other service problems without materially impacting production quantity or the percentage of acceptable products.

During the manufacturing process, one or more
5   "events" are tracked and recorded including, without limitation, the time at which the completed "image" is assembled from the disk farm, the time at which the data comprising individual components is sent over the communications subsystem, the particular identity of the
10 burner in the manufacturing farm that is selected for servicing a given request, the time at which the burner "logs-off" from the network (or otherwise blocks receipt of new traffic or other interrupt activity), the "time" at which the particular burn is initiated, the "time" at
15 which the particular burn is completed, the length of the burn, the "fact" that the burn was successful (or not), any errors or other occurrences of interest, and so forth. Such information (or any component thereof) is then made available to the management subsystem 16 of **Figure 1**. In
20 this manner, the customer may access the service to determine the particular state of his or her particular manufacturing request.

In particular, after credit or payment is verified, the management subsystem (or the Internet server)
25 preferably notifies the customer of an order "confirmation" number. Although not required, this notification may be in the form of an e-mail message that includes a hyperlink (with the order number comprising part of the link). When the user selects the hyperlink,
30 the user's Web browser is launched to a tracking page (which is usually a page at the Internet server 15) that provides order status updates to the customer. The user may alternatively navigate to the tracking page and enter a tracking number to obtain the given manufacturing status
35 updates.

After a given CD-ROM has been created at a burner machine, the CD-ROM is removed from the burner and placed

in a conventional "jewel" or other package along with various packaging materials or inserts (e.g. information about the various sound recordings or data on the CD). The particular type of package or packaging method is not

5 limited to a jewel package, of course. The CD-ROM burner or some server associated therewith preferably includes a bar code or similar identifier generator that prints a "bar code" or other identifier uniquely identifying the particular product (e.g., by order number, shipping

10 method, job number, batch number or the like). The bar code or other identifier is preferably printed at the burner machine (or at some server that is associated with the burner machines in the subgroup, for example) and placed on the packaging (either manually by a technician,

15 or automatically). The bar code or other identifier is then read and the information provided to the shipping management subsystem 19, which is also preferably a computer or set of connected computers. Shipping management subsystem 19 may also include a quality control

20 station associated therewith for running a set of quality checks on the products or their packaging, or both.

Shipping management subsystem 19 also preferably generates a second e-mail message or otherwise provides information to the customer that his or her custom CD-ROM

25 has been shipped. Thus, for example, the second e-mail may include a hyperlink with an embedded shipping tracking number such that when the customer activates the link, he or she may access a tracking system (e.g., a third party site such as the UPS® or Federal Express® Web site) so

30 that the particular movements of the product can be readily determined.

Although in the preferred embodiment of the invention the manufacturing facility is used to burn the CD product, this is not a requirement of the invention. Thus, for

35 example, individual data components (such as song tracks) or whole assembled images (of such components) may be

transmitted to a customer electronically so that the customer (if he or she has suitable equipment) may burn the physical medium directly or otherwise store the assembled data.

5   Many of the operations of the administrative and control functions of the management subsystem of the invention are provided in software. One of the preferred implementations of the invention is thus as a set of instructions (program code) in a code module resident in
10   the random access memory of a computer. Until required by the computer, the set of instructions may be stored in another computer memory, for example, in a hard disk drive, or in a removable memory such as an optical disk (for eventual use in a CD ROM) or floppy disk (for
15   eventual use in a floppy disk drive), or downloaded via the Internet or other computer network.

As used herein, "client" should be broadly construed to mean any computer or component thereof directly or indirectly connected or connectable in any known or later-
20   developed manner to a computer network, such as the Internet. The term "server" should also be broadly construed to mean a computer, computer platform, an adjunct to a computer or platform, or any component thereof.

25   Having thus described my invention, what I claim as new and desire to secure by Letters Patent is set forth in the following claims.

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CLAIMS

1. A method of custom manufacture of a digital data product from digital information supported in a disk farm connected to a network, wherein a set of burner machines are connected to the network, the method comprising the steps of:

   (a) selecting a set of digital data files in the disk farm;

   (b) identifying one of the set of burner machines to be used in manufacturing the product;

   (c) transferring each of the digital data files of the set to the identified machine;

   (d) isolating the identified machine from interference; and

   (e) recording the digital data files of the set to a physical medium.

2. The method as described in Claim 1 wherein the digital data files comprise sound recording tracks.

3. The method as described in Claim 2 wherein the physical medium is selected from a group of physical media consisting of CD-ROM, DVD, digital audio tape and other digital storage devices.

4. The method as described in Claim 1 wherein the set of digital data files in the disk farm are selected by a customer accessing the network from a terminal.

5. The method as described in Claim 4 wherein the terminal is located at a retail establishment.

6. The method as described in Claim 1 wherein the set of digital data files in the disk farm are selected by a customer accessing the network through an electronic communication.

7.   The   method   as   described   in   Claim **1** further
including the step of verifying a customer payment method
prior to step (b).

5

8.   The   method   as   described   in   Claim **7** further
including the step of provide a notification to the
customer that an order has been accepted.

10   9.   The method as described in Claim **8** wherein the
notification includes an e-mail message having a hyperlink
associated therewith.

10. The method as described in Claim **9** wherein the
15   hyperlink   has   an   order   tracking   number   associated
therewith.

11. The method as described in Claim **10** further
including   the   step   of   activating   the   hyperlink   to
determine information about manufacture of the digital
20   data product.

12.   The method as described in Claim **1** wherein at
least one individual digital data file includes a code to
allow later tracking of a particularly physical medium or
25   a copy thereof back to a specific identifier.

13. A method of large scale custom manufacture of
digital data products from digital information supported
in a disk farm connected to a computer network, wherein a
30   set of machines in a manufacturing farm are connectable to
the computer network, the method comprising the steps of:
having each of a set of customers select a custom set
of digital data files in the disk farm to generate a
order;

for each order, identifying one of the set of machines to be used to manufacture the product for a given customer;
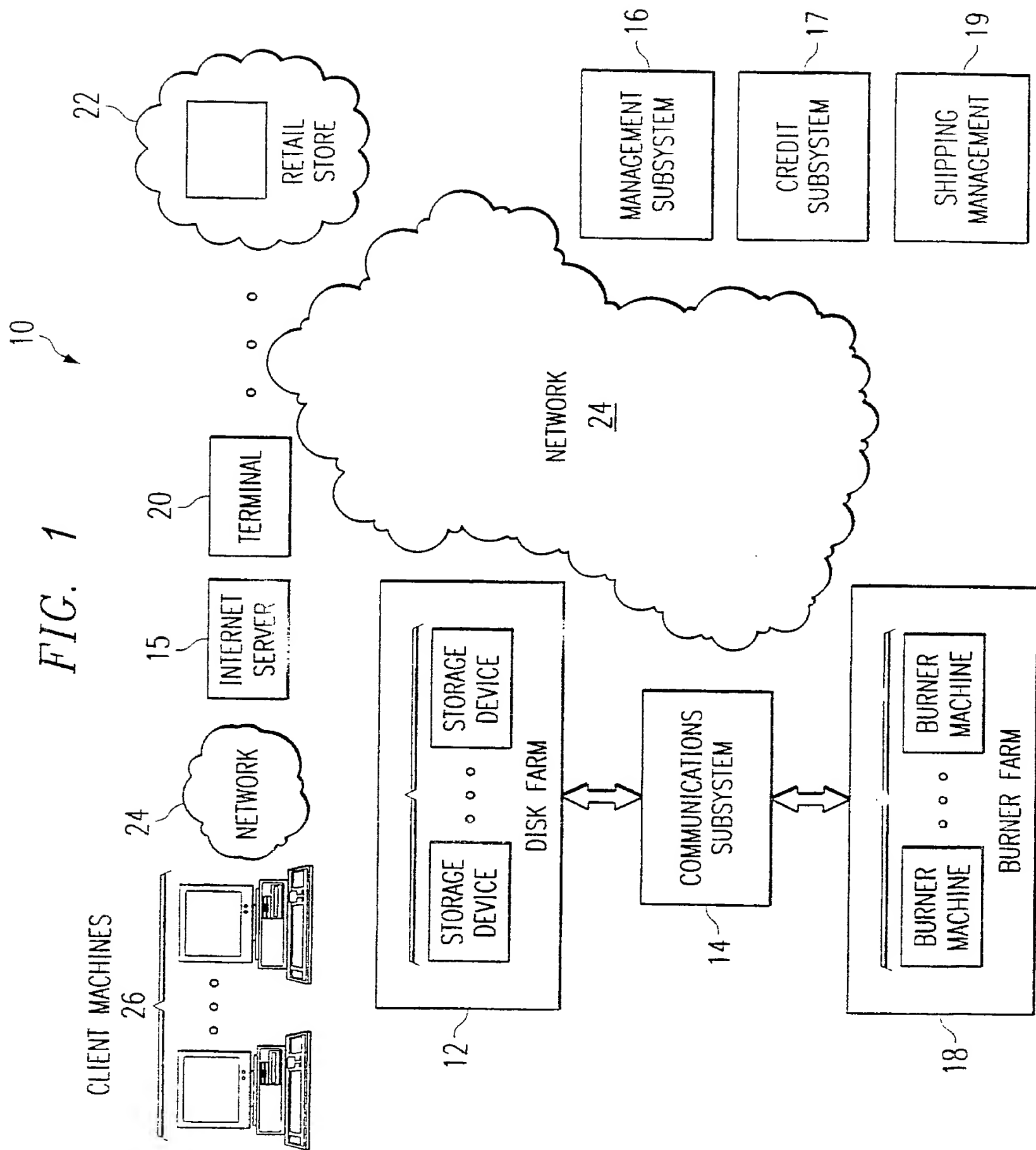
for each order, transferring each of the digital data
5   files of the selected set to the identified machine in the manufacturing farm;

for each order, isolating the identified machine from interference after the digital data files of the selected set are assembled at the identified machine; and
10   for each order, recording the digital data files of the set to a physical medium.

14. The method as described in Claim **13** wherein the step of identifying a machine in the set of machines is
15   carried out in response to work requests received from individual machines in the manufacturing farm.
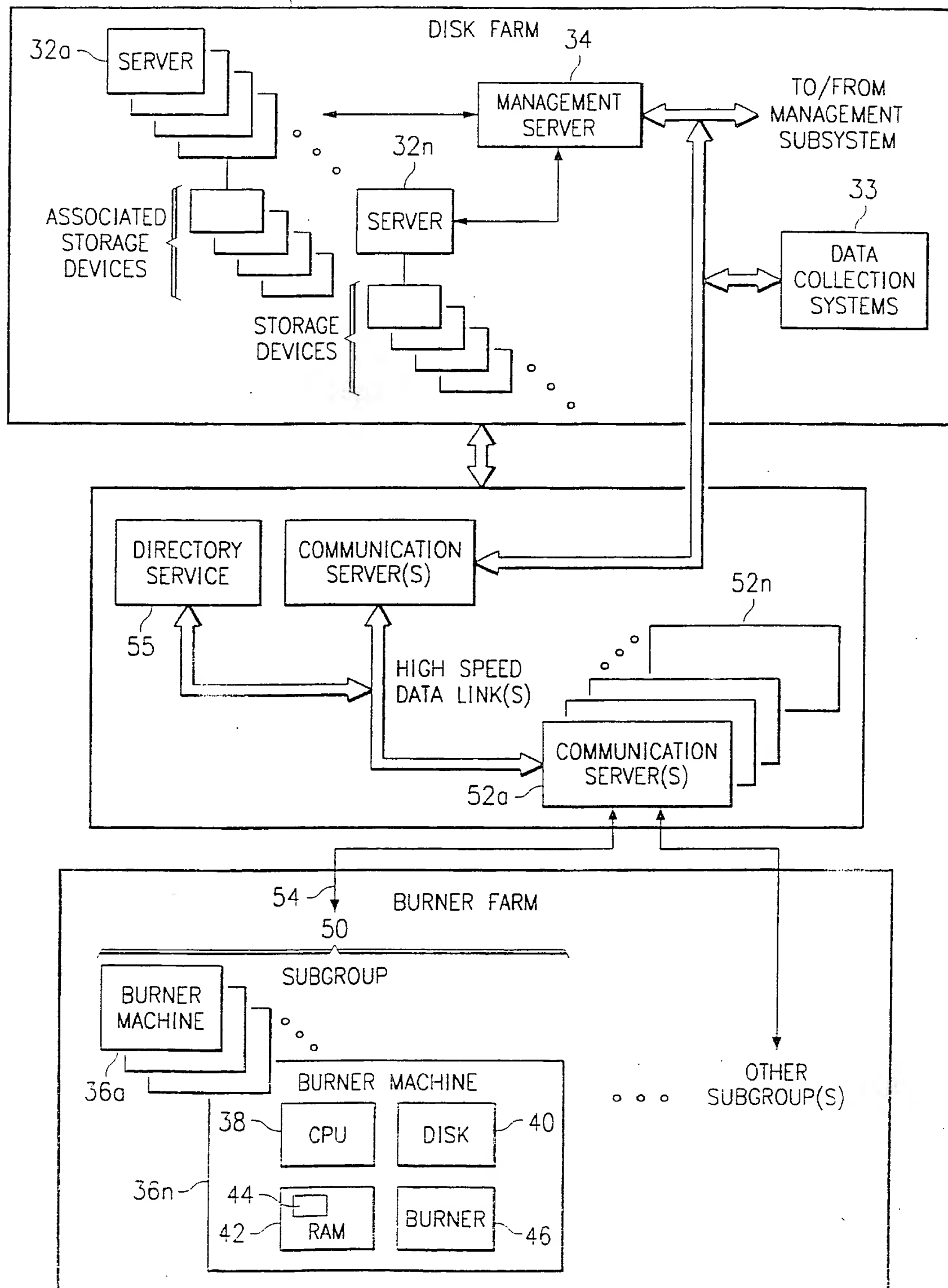

15. The method as described in Claim **13** wherein the step of identifying a machine in the set of machines is
20   carried out in response to work requests sent to individual machines in the manufacturing farm.

FIG. 1

RETAIL STORE — 22

10

TERMINAL — 20

INTERNET SERVER — 15

CLIENT MACHINES 26

NETWORK — 24

NETWORK 24

MANAGEMENT SUBSYSTEM — 16

CREDIT SUBSYSTEM — 17

SHIPPING MANAGEMENT — 19

STORAGE DEVICE

STORAGE DEVICE

DISK FARM — 12

COMMUNICATIONS SUBSYSTEM — 14

BURNER MACHINE

BURNER MACHINE

BURNER FARM — 18

FIG. 2

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G06K 19/00

US CL :705/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/26

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,846,627 A (HONG) 08 December 1998, fig. 1, fig. 2.	1-10

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

03 MARCH 1999

Date of mailing of the international search report

23 APR 1999

Name and mailing address of the ISA US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

THOMAS PEESO

Telephone No. (703) 305-9784

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